

**AIRBORNE MEASUREMENTS OF NO, NO<sub>2</sub>, AND NO<sub>x</sub>, AS  
RELATED TO NASA'S PACIFIC EXPLORATORY MISSION**

**(NAG-1-1213)**

**SEMI-ANNUAL REPORT**

**Performance Period Ending August 13, 1993**

**Submitted to:**

**Project Monitor: Dr. Edward V. Browell**

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**SEMI-ANNUAL STATUS REPORT**  
(Performance Period Ending August 13, 1993)

During this six month reporting period, our efforts have been primarily focused on various aspects of the analysis of the PEM-WA data set. We took the lead role in developing a collaborative science team paper on the characterization of aged Western Pacific air. This paper was presented at the first IGAC meeting in Eilat, Israel. We are now in the progress of developing the premise of this initial paper into a full paper for submission to the JGR special issue on PEM-WA. The final paper is currently envisioned to be the second in a series of three papers in conjunction with the efforts of Gregory and Talbot. These papers will attempt to give a detailed examination of the overall chemical composition observed over the Western Pacific during PEM-WA.

At the request of the GTE project office we carried out a comparative analysis between the Nagoya University and Georgia Tech NO and NO<sub>y</sub> measurements. A preliminary report on this analysis was presented at the second PEM-WA workshop. This analysis was subsequently revised and presented to the NO/NO<sub>y</sub> Blue Ribbon Panel, headed by Dr. Crosley, that was assigned the task of critically reviewing the PEM-WA NO/NO<sub>y</sub> measurements and measurement techniques. This meeting was convened in July, 1993. In addition, the NO/NO<sub>y</sub> Blue Ribbon panels recommendations to have investigators improve their sampling inlet design has moved forward. We have now ascertained that a new inlet will allow us to dramatically shorten our connection to the NO<sub>y</sub> convertor, and the incorporation of a flow diffuser on our inlet will aid in the discrimination against sampling aerosols while eliminating the sizable pressure drop that occurred in our old inlet design. Designs for this flow diffuses have now been iterated with the design aerodynamics team at

AMES and construction/testing of this device is now scheduled for early October.

We have now completed a fourth version of our merged data products. This update now includes all changes to the data archive as of August 10, 1993. These changes primarily include (a) addition of the aerosol measurements by Gregory/Anderson; (b) correction for the instrument artifact time base shift in the CO<sub>2</sub>/N<sub>2</sub>O/CO measurements; (c) deletion of UNH SO<sub>2</sub> data; (d) inclusion of the project office best estimate H<sub>2</sub>O and corrections to UV solar flux; and (e) correction of other minor errors that were submitted by PIs. This product does not include modeling results or potential verticity along the flight track as these data products were not available as of August 10, 1993. These merged data products have now been made available to all PEM-WA science team members.

Following the PEM-WA science team meeting we participated in a mini-workshop that was held at Langley Research Center to assess the feasibility of assigning chemical signatures to the various air mass classifications being defined by the DIAL data and analysis efforts of Dr. Browell and his group. This working group was quite successful in carrying out this task. The results of this effort in conjunction with follow-up activities will form a valuable addition to the PEM-WA final interpretive analysis publications.

Another GTE project activity, which was completed during this reporting period, was the submission of our revised ABLE-3B manuscript for the JGR ABLE-3B special issue.